

Claims

- [c1] A method for obtaining cine angiography images in a computed tomography (CT) scanner, said method comprising:
positioning a patient at a first position in a CT scanner;
scanning the patient during a first sweep beginning at a first triggering event;
moving the patient to a second position;
scanning the patient in a second sweep beginning at a second triggering event;
and
forming a series of motion images based on at least said first sweep and said second sweep.
- [c2] The method of claim 1 further comprising stopping said scanning after said first sweep.
- [c3] The method of claim 1, further comprising displaying said series of motion images.
- [c4] The method of claim 1, wherein at least one of said first triggering event and said second triggering event constitute a predetermined percent completion of a cardiac R-wave.
- [c5] The method of claim 1, wherein said first triggering event occurs a predetermined time period after a reference point in time.
- [c6] The method of claim 1, wherein said second triggering event occurs a predetermined time period after said first triggering event.
- [c7] The method of claim 1, wherein at least one of said first triggering event and said second triggering event constitute a predetermined percentage of an interval between R-waves.
- [c8] The method of claim 1, wherein at least one of said first triggering event and said second triggering event constitute a prospective triggering event.
- [c9] The method of claim 1, wherein at least one of said first triggering event and said second triggering event occurs at 40% completion of an interval between

cardiac R-waves.

- [c10] The method of claim 1, wherein at least one of said first triggering event and said second triggering event occurs at 80% completion of an interval between cardiac R-waves.
- [c11] The method of claim 1, wherein said series of motion images is formed from image data obtained over successive heartbeats.
- [c12] A system for obtaining cine angiography images in a computed tomography (CT) scanner, said system comprising:
 - an electron beam being initiated based on a trigger, said electron beam sweeping a target ring to produce x-rays for irradiating a patient;
 - a beam control system for controlling said electron beam to sweep said target ring to irradiate said patient in at least two CT scans;
 - a movable patient positioner for positioning a patient between said target ring and a detector ring, said movable patient positioner moving said patient from a first position to a second position between or during said at least two CT scans;
 - a detector ring for detecting x-rays passing through said patient from said target ring; and
 - a data acquisition system for acquiring image data from said detector ring based on said x-rays during said at least two CT scans, said data acquisition system forming a series of motion images based on said image data.
- [c13] The system of claim 13, further comprising a display for displaying said series of motion images.
- [c14] The system of claim 12, further comprising multiple target rings.
- [c15] The system of claim 12, further comprising multiple detector rings.
- [c16] The system of claim 12, wherein said patient positioner moves between sweeps of said electron beam.
- [c17] The system of claim 12, further comprising an image reconstruction module for processing said image data to form said series of motion images based on said image data.

[c18] The system of claim 12, further comprising an ECG digitizer for generating said trigger based on a patient's cardiac cycle.

[c19] A method for generating a cine sequence of images depicting cardiac activity, said method comprising:
sweeping an energy beam over a target to generate radiation to irradiate a patient;
moving the patient as the energy beam sweeps over the target to generate radiation, said radiation irradiating a plurality of portions of the patient's heart as the patient is moved;
detecting radiation attenuated by the patient;
converting the detected radiation to data signals, said data signals including cardiac information indicative of the patient;
generating a cine sequence of images using the data signals, said images depicting cardiac activity of the patient.

[c20] The method of claim 19, further comprising displaying said cine sequence of images.

[c21] The method of claim 19, wherein the patient moves at a rate of three millimeters per second.

[c22] The method of claim 19, further comprising the step of triggering the energy beam to sweep over the target.

[c23] The method of claim 22, wherein said triggering comprises triggering the energy beam at a predetermined point in a cardiac R-wave.

[c24] The method of claim 22, wherein said triggering comprises triggering the energy beam after a predetermined time period after a reference point in time.

[c25] The method of claim 22, wherein said triggering comprises triggering the energy beam at a predetermined point in an interval between cardiac R-waves.

[c26] The method of claim 19, wherein said data signals are obtained over successive heartbeats.

[c27] A method for obtaining a cine sequence of cardiac images, said method comprising:

- triggering an energy beam during an interval between first and second cardiac R-wave peaks in a first sweep over a target ring to generate radiation to irradiate a patient;
- collecting a first set of image data signals from radiation attenuated by the patient, said first set of image data signals including cardiac information indicative of the patient;
- moving the patient from a first position to a second position;
- triggering the energy beam to perform a second sweep over the target ring;
- collecting a second set of image data signals from radiation passing from the target ring through the patient, said second set of image data signals including cardiac information indicative of the patient; and
- generating a cine sequence of cardiac images from at least said first and second sets of image data signals.

[c28] The method of claim 27, wherein said moving step further comprises moving the patient from a first position to a second position after the first sweep.

[c29] The method of claim 27, wherein said moving step further comprises moving the patient from a first position to a second position during at least one of said first sweep and said second sweep.